

Pesticide MSDS

Syngenta Crop Protection, Inc.
Post Office Box 18300
Greensboro, NC 27419

In Case of Emergency, Call
1-800-888-8372

1. PRODUCT IDENTIFICATION

Product Name: **BARRICADE 65WG HERBICIDE** Product No.: A9950A
 EPA Signal Word: **Caution**
 Active Ingredient(%): **Prodiamine (65.0%)** CAS No.: 29091-21-2
 Chemical Name: **N3,N3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine**
 Chemical Class: **Dinitroaniline Herbicide**
 EPA Registration Number(s): 100-834 Section(s) Revised: 12

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Kaolin Clay	15 mg/m ³ TWA (total); 5 mg/m ³ TWA (respirable)	2 mg/m ³ TWA (respirable)	10 mg/m ³ TWA (total); 5 mg/m ³ TWA (respirable)**	No
Crystalline Silica, Quartz	10 mg/m ³ /(%SiO ₂ +2) (respirable dust)	0.1 mg/m ³ (respirable silica)	Not Established	IARC Group 2A
Dispersing Agent	Not Established	Not Established	15 mg/m ³ TWA (total)*	No
Prodiamine (65.0%)	Not Established	Not Established	Not Established	No

* recommended by manufacturer

** recommended by NIOSH

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.

3. HAZARDS IDENTIFICATION
Symptoms of Acute Exposure

Causes mild eye and skin irritation. Allergic skin reactions are possible.

Hazardous Decomposition Products

Can decompose at high temperatures forming toxic gases.

Physical Properties

Appearance: **Yellow granules**

Odor: **Odorless**

Unusual Fire, Explosion and Reactivity Hazards

This product is considered electrically conductive. Static electricity, mechanical sparks, open flames and certain hot surfaces (greater than 680°F [360°C]) can serve as ignition sources for this material.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

4. FIRST AID MEASURES

Have the product container, label or Material Safety Data Sheet with you when calling Syngenta (800-888-8372), a poison control center or doctor, or going for treatment.

- Ingestion:** If swallowed: Call Syngenta (800-888-8372), a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 800-888-8372 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- Eye Contact:** If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Skin Contact:** If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Syngenta (800-888-8372), a poison control center or doctor for treatment advice.
- Inhalation:** If inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call Syngenta (800-888-8372), a poison control center or doctor for further treatment advice.

Notes to Physician

There is no specific antidote if this product is ingested.

Treat symptomatically.

Medical Condition Likely to be Aggravated by Exposure

None known.

5. FIRE FIGHTING MEASURES

Fire and Explosion

- | | | |
|------------------------------|-------------------------|-------------------------|
| Flash Point (Test Method): | Not Applicable | |
| Flammable Limits (% in Air): | Lower: % Not Applicable | Upper: % Not Applicable |
| Autoignition Temperature: | Not Available | |
| Flammability: | Not Flammable | |

Unusual Fire, Explosion and Reactivity Hazards

This product is considered electrically conductive. Static electricity, mechanical sparks, open flames and certain hot surfaces (greater than 680°F [360°C]) can serve as ignition sources for this material.

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO₂ extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated. Water runoff can cause environmental damage. If water is used to fight fire, dike and collect runoff.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Contain the spill to prevent it from spreading, contaminating soil, or entering sewage and drainage systems or any body of water. Clean up spills immediately, observing precautions outlined in Section 8. If a solid, sweep up material and place in a compatible disposal container. If a liquid, cover entire spill with absorbing material and place into compatible disposal container. Scrub area with hard water detergent (e.g. commercial products such as Tide, Joy, Spic and Span). Pick up wash liquid with additional absorbent and place into compatible disposal container. Once all material is cleaned up and placed in a disposal container, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Handle this material only in electrically conductive equipment. Electrically ground and bond this equipment as well as any

worker who could contact a dust cloud formed of this material. Eliminate the presence of mechanical sparks and other ignition sources where dust clouds of this material could form. Bulk bags (FIBC) used to contain this material should be either type B or type C. If type C bags are used make sure they are electrically grounded before powder is discharged from the bag. This material is considered explosion class (Kst) 2. This material can energetically decompose at approximately 383°F (195°C). Do not store or process at temperatures above 320°F (160°C).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

- Ingestion:** Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.
- Eye Contact:** Where eye contact is likely, use chemical splash goggles.
- Skin Contact:** Where contact is likely, wear chemical-resistant (such as nitrile or butyl) gloves, coveralls, socks and chemical-resistant footwear. For overhead exposure, wear chemical-resistant headgear.
- Inhalation:** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below exposure limits. A NIOSH-certified combination air-purifying respirator with an N, P or R 95 or HE class filter and an organic vapor cartridge may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited. Use a pressure demand atmosphere-supplying respirator if there is any potential for uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance:** Yellow granules
- Odor:** Odorless
- Melting Point:** Not Available
- Boiling Point:** Not Applicable
- Specific Gravity/Density:** 0.63 g/cm³
- pH:** 8.0 (5% in deionized water)

Solubility in H₂O

Prodiamine: 0.013 ppm @ 77°F (25°C)

Vapor Pressure

Prodiamine: 1.0 x 10⁻⁶ mmHg @ 68°F (20°C)

10. STABILITY AND REACTIVITY

- Stability:** Stable under normal use and storage conditions.
- Hazardous Polymerization:** Will not occur.
- Conditions to Avoid:** Thermal, mechanical and electrical ignition sources.
- Materials to Avoid:** Oxidizing agents.
- Hazardous Decomposition Products:** Can decompose at high temperatures forming toxic gases.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies (Finished Product)

- Ingestion:** Practically Non-Toxic
- Oral (LD50 Rat) : > 5,000 mg/kg body weight
- Dermal:** Slightly Toxic
- Dermal (LD50 Rat) : > 2,000 mg/kg body weight
- Inhalation:** Slightly Toxic
- Inhalation (LC50 Rat) : 1.81 mg/l air - 4 hours
- Eye Contact:** Mildly Irritating (Rabbit)

Skin Contact: Practically Non-Irritating (Rabbit)
Skin Sensitization: Sensitizing (Guinea Pig)

Reproductive/Developmental Effects

Prodiamine: Fetal toxicity at high dose levels (rats); developmental and maternal toxicity observed at 1g/kg/day.

Chronic/Subchronic Toxicity Studies

Prodiamine: Liver (alteration and enlargement) and thyroid effects (hormone imbalances) at high dose levels (rats); decreased body weight gains.

Carcinogenicity

Prodiamine: Benign thyroid tumors (rat). None observed (mouse).

Other Toxicity Information

None.

Toxicity of Other Components

Dispersing Agent

Exposure can result in eye, skin and respiratory tract irritation.

Kaolin Clay

Long term exposure to high concentrations of this dust may produce x-ray evidence of dust in the lungs. Continued long term overexposure may affect respiratory function in some individuals.

Target Organs

Active Ingredients

Prodiamine: Liver, thyroid

Inert Ingredients

Dispersing Agent: Eye, skin, respiratory tract

Kaolin Clay: Lung

12. ECOLOGICAL INFORMATION

Summary of Effects

Prodiamine:

Highly toxic to fish and invertebrates. Practically non-toxic to birds and bees.

Eco-Acute Toxicity

Prodiamine: Rainbow Trout 96-hour LC50 0.83 ppm
Bluegill Sunfish 96-hour LC50 0.55 ppm
Daphnia magna 48-hour LC50 0.66 ppm
Bobwhite 8-day Dietary LC50 > 10,000 ppm
Mallard 8-day Dietary LC50 > 10,000 ppm
Bees LC50/EC50 > 100 ug/bee

Eco-Chronic Toxicity

Prodiamine: Not Available

Environmental Fate

Prodiamine:

No data available for the formulation. The information presented here is for the active ingredient, prodiamine. A thorough review of environmental information is not possible in this document.

Does not bioaccumulate. Persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 h).

13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse product containers. Dispose of product containers, waste containers, and residues according to local, state, and federal health and environmental regulations.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Not regulated by DOT.

B/L Freight Classification

Herbicides, NOI

Comments

International Transportation

Environmentally Hazardous Substance, Solid, N.O.S. (prodiamine, 65%), Class 9, UN3077, PGIII, Marine Pollutant

15. REGULATORY INFORMATION

EPCRA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard
Chronic Health Hazard
Reactive Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65

Not Applicable

CERCLA/SARA 302 Reportable Quantity (RQ)

None

RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings

Health: 1
Flammability: 2
Instability: 1

HMIS Hazard Ratings

Health: 1
Flammability: 2
Reactivity: 1

0	Minimal
1	Slight
2	Moderate
3	Serious
4	Extreme

For non-emergency questions about this product call:

1-800-334-9481

Original Issued Date: 01/02/1992

Revision Date: 04/24/2003

Replaces: 10/08/2002

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

VP#: SCP-955-834A-00145M

End of MSDS

MATERIAL SAFETY DATA SHEET



Emergency Phone: 800-992-5994
Dow AgroSciences LLC
Indianapolis, IN 46268

Date: 6/1/01
Product Code: 88828

DIMENSION* T&O HERBICIDE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

DIMENSION* T&O Herbicide

COMPANY IDENTIFICATION:
Dow AgroSciences
9330 Zionsville Road
Indianapolis, IN 46268

EMERGENCY TELEPHONE NUMBER:
800-992-5994

2. COMPOSITION/INFORMATION ON INGREDIENTS

No		CAS REG NO	WEIGHT (%)
1	Dithiopyr	97886-45-8	12.7-13.0
2	Solvent naphtha, petroleum, heavy arom.	64742-94-5	87.0-87.3
3	Surfactant mixture	Undisclosed	
4	Related reaction products	None	

3. HAZARDS IDENTIFICATION

Primary Routes of Exposure

Inhalation
Eye Contact
Skin Contact

Inhalation

Inhalation of solvent vapor or mist can cause the following: irritation of nose, throat, and lungs - dizziness - headache - nausea - drowsiness - anesthetic effects - central nervous system effects - unconsciousness

Eye Contact

Direct contact with material can cause the following: substantial irritation

Skin Contact

Material can cause the following: severe skin irritation

Prolonged or repeated skin contact can cause the following: defatting and drying of the skin which can lead to irritation and dermatitis - reddening - skin sensitization in susceptible individuals

Ingestion

Material is possibly harmful if swallowed.

Delayed Effects

Repeated overexposure to the active ingredient in this material can cause the following: kidney effects - liver effects - blood effects - thyroid damage - adrenal effects

Prolonged or repeated overexposure to naphtha can cause the following: liver damage - kidney damage

4. FIRST AID MEASURES

Inhalation

Move subject to fresh air. If breathing is difficult, give oxygen. Give artificial respiration if breathing has stopped. Get prompt medical attention.

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DIMENSION* T&O HERBICIDE

Eye Contact

Flush eyes with a large amount of water for at least 15 minutes. See a physician.

Skin Contact

IMMEDIATELY get under a safety shower. Wash affected skin areas thoroughly with soap and water. Remove and wash contaminated clothing thoroughly. Do not take clothing home to be laundered. Get prompt medical attention.

Ingestion

DO NOT induce vomiting. DO NOT give fluids. IMMEDIATELY see a physician. Never give anything by mouth to an unconscious person. DO NOT induce vomiting, petroleum distillate present. Careful gastric lavage may be indicated.

Note to Physician

In acute cases of naphtha overexposure or ingestion, patients should be evaluated for signs of respiratory distress. If swallowed, DO NOT induce vomiting due to the risk of aspiration posed by petroleum distillates.

5. FIRE FIGHTING MEASURES

Flash Point	63°C/145°F Tag Closed Cup
Auto-ignition Temperature	443°C/829°F Solvent, naphtha
Lower Explosive Limit	0.8% Solvent, naphtha
Upper Explosive Limit	7.0% Solvent, naphtha

Unusual Hazards

Pesticide particulates can become airborne.

Combustion generates toxic fumes of the following: nitrogen oxides - carbon oxides

Extinguishing Agents

Use the following extinguishing media when fighting fires involving this material: carbon dioxide - dry chemical - water spray - foam

Personal Protective Equipment

Wear self-contained breathing apparatus (pressure-demand NIOSH approved or equivalent) and full protective gear.

Special Procedures

Contain run-off. Remain upwind. Avoid breathing smoke. Use water spray to cool containers exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

Personal Protection

Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow. Remove all contaminated clothing promptly. Wash all exposed skin areas with soap and water immediately after exposure. Thoroughly launder clothing before reuse. Do not take clothing home to be laundered.

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Procedures

Eliminate all ignition sources. Ventilate the spill area. Avoid breathing vapor. Contain spills immediately with inert materials (e.g. sand, earth). Transfer spilled material to suitable containers for recovery or disposal.
WARNING: KEEP SPILLS AND CLEANING RUNOFFS OUT OF MUNICIPAL SEWERS AND OPEN BODIES OF WATER. NOTE: Spills on porous surfaces can contaminate groundwater.

7. HANDLING AND STORAGE

Storage Conditions

Do not store this material near food, feed or drinking water. The minimum recommended storage temperature for this material is 4.4C/40F. Store in a well ventilated area. Ground all metal containers during storage and handling. Store away from excessive heat (e.g. steampipes, radiators), from sources of ignition and from reactive materials. Store out of direct sunlight in a cool place.
Keep container tightly closed when not in use.

Handling Procedures

Do not handle material near food, feed or drinking water. Ground all containers when transferring material. This material is a potential skin sensitizer. See SECTION 8, Exposure Controls/Personal Protection, prior to handling.

Other

CONTAINERS HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue (vapors and/or liquid) follow all MSDS and label warnings even after container is emptied. Residual vapors in empty containers may explode on ignition. DO NOT cut, drill, grind or weld on or near container. Triple rinse (or equivalent) and puncture empty container. Dispose empty container in a sanitary landfill or by incineration as allowed by state and local authorities. Avoid inhalation of smoke if incinerated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limit Information

No		CAS REG NO	WEIGHT (%)
1	Dithiopyr	97886-45-8	12.7-13.0
2	Solvent naphtha, petroleum, heavy arom.	64742-94-5	87.0-87.3
3	Surfactant mixture	Undisclosed	
4	Related reaction products	None	

Comp. No.	Units	Dow AgroSciences		OSHA		ACGIH	
		TWA	STEL	TWA	STEL	TWA	STEL
1	mg/m3	0.25	0.75	None	None	None	None
2		None	None	None	None	None	None
3		None	None	None	None	None	None
4		None	None	None	None	None	None

End users must follow label instructions when using this product.

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DIMENSION* T&O HERBICIDE

Respiratory Protection

A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in 'Exposure Limit Information'.

Up to 10 times the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) half-mask, air-purifying respirator.

Up to 50 times the exposure limit: Wear a properly fitted NIOSH approved (or equivalent) full-face piece, air-purifying respirator, OR full-face piece, airline respirator in the pressure demand mode.

Above 50 times the exposure limit or Unknown: Wear a properly fitted NIOSH approved (or equivalent) self-contained breathing apparatus in the pressure demand mode, OR full-face piece, airline respirator in the pressure demand mode with emergency escape provision. Air-purifying respirators should be equipped with NIOSH approved (or equivalent) organic vapor cartridges and N100 filters. If oil mist is present, use R100 or P100 filters.

Eye Protection

Use chemical splash goggles (ANSI Z87.1 or approved equivalent). Eye protection worn must be compatible with respiratory protection system employed.

Hand Protection

Chemical-resistant gloves should be worn whenever this material is handled.

The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection: Neoprene

Gloves should be removed and replaced immediately if there is any indication of degradation or chemical breakthrough. Rinse and remove gloves immediately after use. Wash hands with soap and water.

Other Protection

Use chemically resistant apron or other impervious clothing to avoid prolonged or repeated skin contact.

Engineering Controls (Ventilation)

Use explosion proof local exhaust ventilation with a minimum capture velocity of 100 ft/min. (0.5 m/sec.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

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DIMENSION* T&O HERBICIDE

9. PHYSICAL AND CHEMICAL PROPERTIES

Color	Yellow
State	Liquid
Odor Characteristic	Kerosine odor
pH	4.1 Aqueous solution
Viscosity	11 CPS
Specific Gravity (Water = 1)	0.95
Vapor Density (Air = 1)	4.8 Solvent, naphtha
Vapor Pressure	3 mm Hg @ 25°C/77°F Solvent, naphtha
Melting Point	No Data
Boiling Point	176° to 210°C/349° to 410°F Solvent, naphtha
Solubility in Water	Emulsifiable
Percent Volatility	85% Approximate
Evaporation Rate (BAc = 1)	< 1

The physical and chemical data given in Section 9 are typical values for this product and are not intended to be product specifications.

See Section 5, Fire Fighting Measures

10. STABILITY AND REACTIVITY

Instability

This material is considered stable. However, avoid contact with ignition sources (e.g. sparks, open flame, heated surfaces).

Hazardous Decomposition Products

There are no known hazardous decomposition products for this material.

Hazardous Polymerization

Product will not undergo polymerization.

Incompatibility

Avoid contact with strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

Acute Data

Oral LD50 - rat: 3600 mg/kg
Dermal LD50 - rabbit: >5000 mg/kg
Inhalation LC50 - rat: 11 mg/L for 4 hr
Eye Irritation - rabbit: substantial irritation
Skin Irritation - rabbit: severe irritation

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DIMENSION* T&O HERBICIDE

Subchronic/Chronic Data

The following data pertains to studies conducted with the technical material, 91% min. active ingredient: In repeat dosing studies (13-week), rodents fed dithiopyr technical exhibited liver toxicity; in dogs, changes in body weight, some organ weights, feed efficiency, and anemia with liver, kidney, thyroid, ovarian and adrenal effects occurred.

Similar doses given to dogs for a longer period (12-months) produced a transient increase in vomiting as well as liver toxicity.

Following repeated skin exposure (3-weeks) to dithiopyr technical, mild transient skin irritation and increased liver weights were the only effects observed in rats.

Carcinogenicity Data

The following data pertains to studies conducted with the technical material, 91% min. active ingredient: Liver toxicity and effects on adrenals and spleen were observed with long-term (18-month) feeding of dithiopyr technical to mice.

Liver and kidney toxicity were observed in a long-term feeding study (24-month) with rats.

Dithiopyr technical did not produce tumors in any of these studies.

Mutagenicity Data

The following data pertains to studies conducted with the technical material, 91% min. active ingredient: This product does not pose a mutagenic hazard.

Reproductive/Teratology Data

The following data pertains to studies conducted with the technical material, 91% min. active ingredient:

No birth defects were noted in rats and rabbits given dithiopyr technical orally during pregnancy, even at amounts, which produced adverse effects on the mothers.

No effects were seen on the ability of male or female rats to reproduce when fed dithiopyr technical for two successive generations.

Decreased weight gain with liver, kidney, thyroid and adrenal toxicity were observed in adult animals, while decreased weight gains and liver toxicity were observed in young animals (pups and weanlings).

Sensitization Data

Skin sensitization - guinea pig: Adverse effects observed.

12. ECOLOGICAL INFORMATION

Environmental Toxicity

Bluegill sunfish (*Lepomis macrochirus*), 96 Hour LC50: 0.47 mg/l

Rainbow trout (*Salmo gairdneri*), 96 Hour LC50: 0.46 mg/l

Daphnia magna, 48 Hour LC50: 5.2 mg/l

Bobwhite quail, 5 Day Dietary LC50: > 5620 ppm

Mallard duck, 5 Day Dietary LC50: > 5620 ppm

Bobwhite quail, Acute oral LD50: > 2250 mg/kg

Honeybee, LD50: 81 µg/bee

Earthworm, 14 Day Immersion LC50: > 1000 mg/kg

This material is toxic to fish.

The above Environmental Toxicity data are from studies conducted on the technical material, 91% min. active ingredient.

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13. DISPOSAL CONSIDERATIONS

Procedure

Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.

14. TRANSPORT INFORMATION

US DOT Hazard Class NONREGULATED

This classification is used when shipping in non-bulk packages for domestic surface transportation only. Exceptions in CFR 49 Parts 171-177 may apply. Consult CFR 49 Parts 171-177 to determine appropriate classification when shipping in bulk packages or when shipping by air or ocean.

15. REGULATORY INFORMATION

Workplace Classification

This product is considered hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200). This product is subject to regulation under the Canadian Pest Control Products Act (P.C.P. Act). Therefore, this product is excluded from the supplier labeling and material safety data sheet requirements as specified in Section 12 of the Hazardous Products Act.

SARA TITLE 3: Section 311/312 Categorizations (40CFR 370)

This product is a hazardous chemical under 29CFR 1910.1200, and is categorized as an immediate and delayed health, and flammability physical hazard.

SARA TITLE 3: Section 313 Information (40CFR 372)

This product does not contain a chemical, which is listed in Section 313 at or above de minimis concentrations.

CERCLA Information (40CFR 302.4)

Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304.

Waste Classification

When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosivity, or reactivity, and is not listed in 40 CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

United States

This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) and is therefore exempt from U.S. Toxic Substances Control Act (TSCA) Inventory listing requirements.

16. OTHER INFORMATION

MSDS STATUS: New

Document Code: D03-813-001

The Information Herein Is Given In Good Faith, But No Warranty, Express or Implied, Is Made. Consult Dow AgroSciences for Further Information

BASF Corporation

BASF**MATERIAL SAFETY DATA SHEET**

Agricultural Products Group
P.O.Box 13528,
Research Triangle Park, NC 27709
(919) 547-2000

EMERGENCY TELEPHONE NUMBERS:

BASF Corporation: 1 (800) 832-HELP

CHEMTREC: 1 (800) 424-9300

Product No.: 579654

Prowl® herbicide technical

Date Prepared: 7/22/2000 Date Revised: 1/17/2003

SECTION I			
Trade Name: Prowl® herbicide technical			
Chemical Name: N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine			
Synonyms: pendimethalin, AC92,553,BAS 455 H,Pendulum tech.,Stomp tech.,Go Go San tech.,Prowl tech.		Formula: C13 H19 N3 O4	
Chemical Family: dinitroaniline		Mol Wt: 281.350	
SECTION II - INGREDIENTS			
COMPONENT	CAS NO.	%	PEL/TLV - SOURCE
*Pendimethalin	40487-42-1	93	3 mg/m(3) - BASF recommended
Inerts		6.3	None established
*Ethylene dichloride	107-06-2	0.7	10 ppm ACGIH/OSHA 40 ppm STEL
*N-nitrosamines may be present at 29 ppm			
SARA Title III Section 313: *Listed			
SECTION III - PHYSICAL DATA			
BOILING/MELTING POINT@760mm Hg:		45 - 57 °C (melts)	pH: Not applicable
VAPOR PRESSURE mmHg @ 20°C:		9.4 x10(-6)(at 25°C)	
SPECIFIC GRAVITY OR BULK DENSITY:		1.17 g/mL	
SOLUBILITY IN WATER:		0.275 mg/L@ 20 °C	
APPEARANCE:		Yellow to brown color solid	ODOR: Nutty INTENSITY: Faint
SECTION IV - FIRE AND EXPLOSION DATA			
FLASH POINT (TEST METHOD):		>97°C (Closed cup)	AUTOIGNITION TEMP: > 200°C
FLAMMABILITY LIMITS IN AIR (% BY VOL):		LOWER: N/D	UPPER: N/D
NFPA 704 HAZARD CODES			
HEALTH: 2		FLAMMABLE: 3*	INSTABILITY: 0 OTHER: N/R
NFPA 30 STORAGE CLASSIFICATION: Class III B			
EXTINGUISHING MEDIUM	Use water fog, foam, CO(2), or dry chemical extinguishing media.		
SPECIAL FIREFIGHTING PROCEDURES	Firefighters should be equipped with self-contained breathing apparatus and turnout gear.		
UNUSUAL FIRE EXPLOSION HAZARDS	None known. Decomposes >220°C. *Organic dusts may form an explosive dust/air mixture. Product @ 0.75 um - Class St-1 dust. Product @ 0.10 um - Class St-2 dust. In liquid form may exotherm at 200°C.		

Product No.: 579654

Prowl® herbicide technical

BASF Corporation

SELECT ACRONYM KEY

N/A - Not available; N/D - Not determined; N/R - Not rated; N/E - Not established

SECTION I - HEALTH DATA**TOXICOLOGICAL TEST DATA:**

Data for pendimethalin technical:

Rat, Oral LD50 (males) = 4665 mg/kg

Rat, Oral LD50 (females) = 5000 mg/kg

Rabbit, Dermal LD50 > 5000 mg/kg

Rat, Inhalation LC50 (1 hr calculated) > 26.92 mg/L

Rat, Inhalation LC50 (4 hr, actual) > 6.73 mg/L

Rabbit, Eye Irritation - Slightly to moderately irritating

Rabbit, Skin Irritation - Not irritating

Guinea pig, Dermal Sensitizer - Not a sensitizer. However data generated by another company has indicated that pendimethalin is a skin sensitizer.

A marked depression in body weight gain and statistically significant increase in benign thyroid proliferative lesions were observed at the highest dose tested (5000 ppm) in the lifetime (24 month) rat study.

The US EPA has classified pendimethalin an oncogenicity rating of "low c" (possible human carcinogen).

OSHA, NTP, or IARC Carcinogen: Ethylene dichloride listed - IARC Group 2 B (Possibly carcinogenic to humans); NTP - Reasonably anticipated to be a human carcinogen

EFFECTS OF OVEREXPOSURE:

See Product Label and Directions For Use for additional precautionary statements.

CAUTION! KEEP OUT OF REACH OF CHILDREN.

HARMFUL IF SWALLOWED.

AVOID CONTACT WITH SKIN, EYES OR CLOTHING.

Wash thoroughly with soap and water after handling.

Medical Conditions Aggravated by Exposure: None known

FIRST AID PROCEDURES

If swallowed: Do not induce vomiting. Call a physician and/or Poison Control Center and get medical attention immediately. Wash out mouth with potable water provided person is conscious and able.

If in eyes: Wash eyes immediately with prolonged flushing (at least 15-20 minutes) of the eyes with large amounts of water or normal saline. Get medical attention.

If on skin: Skin contamination should be treated promptly by washing with soap and large amounts of water (at least 15-20 minutes) after removing contaminated clothing, jewelry and shoes. Get medical attention.

If inhaled: Remove to fresh air and away from exposure immediately. Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention.

Note to physician: If amount ingested was small, if effective emesis has already occurred, or if treatment is delayed, consider administration of activated charcoal and sorbitol by mouth. If large amounts have been ingested and the patient is seen within an hour of ingestion, gastrointestinal decontamination should be considered. There is no specific antidote. Treatment of overexposure should be directed at the control of symptoms and the clinical condition. Pendimethalin is a strongly orange-red compound - virtually an aniline dye. Cases have been described of orange-yellow coloration of urine following heavy exposure of workers to the dust of pendimethalin. Despite its structure as both a nitro-compound and aromatic amine, exposure to pendimethalin is NOT associated with methemoglobinemia.

Note: Have the product container or label with you when calling a poison control center or doctor or going for treatment.

Product No.: 579654

Prowl® herbicide technical

BASF Corporation

SECTION VI - REACTIVITY DATA**STABILITY:** Stable. Avoid temperatures above 130 °C.**CONDITIONS TO AVOID:** Store in original container in cool, dry, well ventilated place away from ignition sources, heat or flame.**CHEMICAL INCOMPATIBILITY:** Oxidizing agents, strong alkali**HAZARDOUS DECOMPOSITION PRODUCTS:** Including but not limited to oxides of carbon and nitrogen**HAZARDOUS POLYMERIZATION:** Does not occur.**CONDITIONS TO AVOID:** Does not polymerize.**CORROSIVE TO METAL:** No**OXIDIZER:** No**SECTION VII - PERSONAL PROTECTION**

Users of a pesticidal end use product should refer to the product label for personal protective equipment requirements.

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:**Respiratory Protection:**

Supplied air respirators should be worn if large quantities of mist/dust are generated or prolonged exposure possible.

Eye Protection:

Chemical goggles when respirator does not provide eye protection.

Protective Clothing:

Chemical resistant gloves and protective clothing as necessary to prevent skin contact.

Ventilation:

Work in well-ventilated areas. Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

SECTION VIII - ENVIRONMENTAL DATA**ENVIRONMENTAL TOXICITY DATA**

For the active ingredient (pendimethalin):

Rainbow Trout, 96hr LC50 - 0.89 mg/L

Bluegill Sunfish, 96hr LC50 - 0.2 mg/L

Sheepshead minnow, 96hr LC50 - 0.707 mg/L

Daphnia magna, 48hr EC50 - 0.977 mg/L

Mallard Duck, Oral LD50 - 1421 mg/kg

Bobwhite Quail, LC50 - 4187 ppm

Honeybee, 48hr Contact LD50 > - 100 ug/bee

Honeybee, 48hr Oral LD50 > - 100 ug/bee

Pendimethalin technical is very toxic to fish, aquatic invertebrates, and algae, toxic to birds, and practically non-toxic to honeybees.

Product No.: 579654

Prowl® herbicide technical

BASF Corporation

SARA 311/312 REPORTING**FIRE: N PRESSURE: N REACTIVITY: N ACUTE: Y CHRONIC: Y TPQ(lbs): N/R****SPILL AND LEAK PROCEDURES:**

In case of large scale spillage of this product, avoid contact, isolate area and keep out animals and unprotected persons. Call CHEMTREC (800 424-9300) or BASF Corporation (800 832-HELP). For a small spill, wear personal protective equipment as specified on the label. Eliminate all ignition sources.

FOR A SOLID SPILL: Sweep solid into a drum for re-use or disposal. Remove personal protective equipment and decontaminate it prior to re-use.

HAZARDOUS SUBSTANCE SUPERFUND:

Yes

RQ(lbs): 100**WASTE DISPOSAL METHOD:**

Pesticide wastes are acutely hazardous. Wastes resulting from this product may be disposed of on site or at an approved waste disposal facility. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If these wastes cannot be disposed of according to label instructions, contact the state agency responsible for pesticide regulation or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

HAZARDOUS WASTE 40CFR261: Yes**HAZARDOUS WASTE NUMBER:** D028 (other codes may apply)**CONTAINER DISPOSAL:**

FOR PLASTIC CONTAINERS: Triple rinse (or equivalent) and add rinsate to the spray tank. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

FOR BULK CONTAINERS: Reusable containers should be returned to the point of purchase for cleaning and re-filling.

FOR MINIBULK CONTAINERS: Clean all tanks on an approved loading pad so rinsate can be collected and mixed into the spray solution or into a dedicated tank. Using a high pressure sprayer, rinse several times with small volumes of water to minimize rinsate.

SECTION IX - SHIPPING DATA - PACKAGE AND BULK**D.O.T. PROPER SHIPPING NAME (49CFR172.101-102):**

10,000 lb or more - Environmentally hazardous substances, solid, n.o.s.
Less than 10,000 lb - none

HAZARDOUS SUBSTANCE**(49CFR CERCLA LIST):**

Ethylene dichloride

RQ(lbs): 100**D.O.T. HAZARD CLASSIFICATION (CFR 172.101-102):****PRIMARY**

10,000 lb or more - Class 9

Package - None

SECONDARY

None

D.O.T. LABELS REQUIRED (49CFR172.101-102):

9

**D.O.T. PLACARDS
REQUIRED (CFR172.604):****POISON CONSTITUENT
(49CFR172.203(K)):**

None

BILL OF LADING DESCRIPTION

10,000 lb or more - RQ, Environmentally hazardous substances, solid, n.o.s. (ethylene dichloride), 9, UN 3077, PG III, ERG 171

Package - Compounds, Tree or Weed Killing (herbicides), NOIBN

(This material is not regulated by the Department of Transportation in a package size of < 10,000 lb.).

CC NO.: Not applicable**UNNA CODE:** UN 3077

Product No.: 579654

Prowl® herbicide technical

BASF Corporation

SECTION X - ADDITIONAL INFORMATION

Prowl® herbicide technical

EPA Reg. No. 241- 245

KEEP OUT OF REACH OF CHILDREN

CAUTION**BASF Corporation**

Agricultural Products Group
P.O.Box 13528,
Research Triangle Park, NC 27709
(919) 547-2000

IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY BASF HEREUNDER ARE GIVEN GRATIS AND BASF ASSUMES NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.

BIFENTHRIN TECHNICAL INSECTICIDE/MITICIDE MATERIAL SAFETY DATA SHEET
BIFENTHRIN TECHNICAL INSECTICIDE/MITICIDE

MSDS Ref. No: 82657-04-3

Version: Global

Date Approved: 05/13/1999

Revision No: 8

This document has been prepared to meet the requirements of the U.S. OSHA

Hazard Communication Standard, 29 CFR 1910.1200; the EC directive , 91/155/EEC

and other regulatory requirements. The information contained here in is for the

concentrate as packaged, unless otherwise noted.

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: BIFENTHRIN TECHNICAL INSECTICIDE/MITICIDE

PRODUCT CODE: 655; 668

ACTIVE INGREDIENT: Bifenthrin

CHEMICAL FAMILY: Pyrethroid Pesticide

MOLECULAR FORMULA: C₂₃H₂₂ClF₃O₂SYNONYMS: FMC 54800; (2-methyl[1,1'-biphenyl]-3-yl)methyl
3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate;

IUPAC: 2-methylbiphenyl-3-ylmethyl

(Z)-(1RS)-cis-3-(2-chloro-3,3,3-trifluoroprop-1-enyl)-2,2-dimethylcyclopropanecarboxylate

ALTERNATE TRADENAME(S): Biflex®; Bistar™; Brigade®; Capture®; Talstar®

MANUFACTURER

FMC CORPORATION

Agricultural Products Group

1735 Market Street

Philadelphia, PA 19103 USA

General Information: 800-433-5080

Emergency Telephone Numbers:

Emergency Phone (FMC) 800-331-3148 (U.S.A. & Canada)

Emergency Phone (FMC) 716-735-3765 (Reverse charges)

CHEMTREC (800) 424-9300 (U.S.A. & Canada)

(202) 483-7616 (All other countries)

2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical NameCAS #Wt.%PEL/TLVEC No.EC Class

Bifenthrin 82657-04-3 89 None None None

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: - Viscous liquid, crystalline solid or waxy solid with a

very faint, slightly sweet odor.

- Slightly combustible. May support combustion at elevated temperatures.

- Thermal decomposition and burning may form toxic by-products.

- For large exposures or fire, wear personal protective equipment.

- Highly toxic to fish and aquatic organisms. Keep out of drains and water courses.

- Moderately toxic if swallowed.

POTENTIAL HEALTH EFFECTS: Effects from overexposure result from either

swallowing or coming into contact with the skin. Symptoms of over exposure

include bleeding from the nose, tremors and convulsions. Contact with this

product may occasionally produce skin sensations such as rashes, numbing,

burning and tingling. These sensations are reversible and usually subside

within 12 hours.

MEDICAL CONDITIONS AGGRAVATED: None presently known.

4. FIRST AID MEASURES

EYES: Flush with plenty of water. Get medical attention if irritation occurs

and persists.

SKIN: Wash with plenty of soap and water.

INGESTION: Drink 1 or 2 glasses of water and induce vomiting by touching the

back of the throat with a finger or by giving syrup of ipecac. Never induce

vomiting or give anything by mouth to an unconscious person. Contact a

medical doctor.

INHALATION: Remove to fresh air. If breathing difficulty or discomfort

occurs and persists, obtain medical attention.

NOTES TO MEDICAL DOCTOR: Bifenthrin is moderately toxic if swallowed and has

low dermal toxicity. It is non-irritating to the skin and practically

non-irritating to the eyes. Bifenthrin has high toxicity by the ingestion

route of exposure. Gastric lavage using an endotracheal tube may be

preferred to vomiting. Reversible skin sensations (paresthesia) may occur

and ordinary skin salves have been found useful in reducing discomfort.

Treatment is otherwise controlled removal of exposure followed by

symptomatic and supportive care.

5. FIRE FIGHTING MEASURES

FLASH POINT AND METHOD: 165°C (329°F) (PM-CC)

EXTINGUISHING MEDIA: Foam, CO₂ or dry chemical. Soft stream water fog only

if necessary. Contain all runoff.

EXPLOSION HAZARDS: Slightly combustible. This material may support

combustion at elevated temperatures.

FIRE FIGHTING PROCEDURES: Isolate fire area. Evacuate downwind.

Wear full

protective clothing and self-contained breathing apparatus. Do not breathe

smoke, gases or vapors generated.

HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide

de, hydrogen
chloride and hydrogen flouride.

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES: Isolate and post spill area. Wear protective clothing and

personal protective equipment as prescribed in Section 8, "Exposure

Controls/Personal Protection". Keep unprotected persons and animals out of the area.

Keep material out of streams and sewers. IF LIQUID: Dike to confine spill

and absorb with an absorbent such as clay, sand or soil. IF SOLID: Large

spills should be covered to prevent dispersal. For dry material, use a wet

sweeping compound or water to prevent the formation of dust. If water is

used, prevent runoff or dispersion of excess liquid by diking and absorbing

with a non-combustible absorbent such as clay, sand or soil. Vacuum, shovel

or pump waste into a drum and label contents for disposal.

To clean and neutralize spill area, tools and equipment, wash with a

suitable solution of caustic or soda ash, and an appropriate alcohol (i.e.,

methanol, ethanol or isopropanol). Follow this by washing with a strong soap

and water solution. Absorb, as above, any excess liquid and add to the drums

of waste already collected. Repeat if necessary. Dispose of drummed waste

according to the method outlined in Section 13, "Disposal Considerations".

7. HANDLING AND STORAGE

GENERAL PROCEDURES: Store in a cool, dry, well-ventilated place. Do not use

or store near heat, open flame or hot surfaces. Store in original containers

only. Keep out of reach of children and animals. Do not contaminate other

pesticides, fertilizers, water, food or feed by storage or disposal.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: General air replacement or dilution ventilation is

sufficient for material handling and storage, but local ventilation should be

used when removing this product from containers. Ventilate all transport

vehicles prior to unloading.

PERSONAL PROTECTIVE EQUIPMENT

EYES AND FACE: For splash, mist, vapor or dust exposure wear chemical

protective goggles or a face shield.

RESPIRATORY: For splash, mist, vapor or dust exposure wear, as a minimum, a

properly fitted half-face or full-face air-purifying respirator which is

approved for pesticides (U.S. NIOSH/MSHA, EU CEN or comparable certification

organization). Respirator use and selection must be based on airborne

concentrations.

PROTECTIVE CLOTHING: Depending upon concentrations encountered, wear

coveralls or long-sleeved uniform and head covering. For larger exposures as

in the case of spills, wear full body cover barrier suit, such as a PVC

suit. Leather items - such as shoes, belts and watchbands - that become

contaminated should be removed and destroyed. Launder all work clothing

before reuse (separately from household laundry).

WORK HYGIENIC PRACTICES: Clean water should be available for washing in case

of eye or skin contamination. Wash skin prior to eating, drinking or using

tobacco. Shower at the end of the workday.

GLOVES:

Wear chemical protective gloves made of materials such as rubber, neoprene,

or PVC. Thoroughly wash the outside of gloves with soap and water prior to

removal. Inspect regularly for leaks.

9. PHYSICAL AND CHEMICAL PROPERTIES

ODOR: Very faint slightly sweet
APPEARANCE: Viscous liquid, crystalline solid, or waxy solid
pH: 5.4 - 6.0 @ 25°C
VAPOR PRESSURE: 1.81×10^{-7} mm Hg @ 25°C
MELTING POINT: 57°C (135°F) to 64°C (147°F)
SOLUBILITY IN WATER: Less than 0.1 ppb
SPECIFIC GRAVITY: 1.21 @ 25°C (water = 1)
MOLECULAR WEIGHT: 422.88 (bifenthrin)
WEIGHT PER VOLUME: 10.07 lb/gal. (1210 g/L)

10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Excessive heat and fire.
STABILITY: Stable
POLYMERIZATION: Will not occur

11. TOXICOLOGICAL INFORMATION

DERMAL LD50: >2000 mg/kg (rabbit)

ORAL LD50: 53.4 mg/kg (rat)

ACUTE EFFECTS FROM OVEREXPOSURE: Bifenthrin is moderately toxic if swallowed and has low dermal toxicity. It is non-irritating to the skin and practically non-irritating to the eyes. Large doses of bifenthrin ingested by laboratory animals produced signs of toxicity including convulsions, tremors and bloody nasal discharge. Bifenthrin does not cause acute delayed neurotoxicity. Experience to date indicates that contact with bifenthrin may occasionally produce skin sensations such as rashes, numbing, burning or tingling. These sensations are reversible and usually subside within 12 hours.

CHRONIC EFFECTS FROM OVEREXPOSURE: In studies with laboratory animals, bifenthrin did not cause reproductive toxicity or teratogenicity. Tremors were associated with repeated exposure of laboratory animals to

bifenthrin.

In lifetime feeding studies conducted with rodents, a slight increase in the incidence of urinary bladder tumors at the highest dose in male mice was considered to be an equivocal response, not evidence of a clear compound-related effect. The overall absence of genotoxicity has been demonstrated in mutagenicity tests with bifenthrin.

CARCINOGENICITY:

IARC: Not listed

NTP: Not listed

OSHA: Not listed

OTHER: (ACGIH) Not listed

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL DATA: Bifenthrin has moderate stability in the soil under

aerobic conditions (half-life range from 65 - 125 days depending on soil

type) and is stable at a wide range of pH values. Bifenthrin has a high Log

Pow (>6.0), a high affinity for organic matter, and is not mobile in soil.

Therefore, there is little potential for movement into groundwater. There

is the potential for bifenthrin to bioconcentrate (BCF = 11,750).

ECOTOXICOLOGICAL INFORMATION: Bifenthrin is highly toxic to fish and aquatic

arthropods and LC50 values range from 0.0038 to 17.8 µg/L. In general, the

aquatic arthropods are the most sensitive species. Care should be taken to

avoid contamination of the aquatic environment. Bifenthrin had no effect on

mollusks at its limit of water solubility. Bifenthrin is only slightly toxic

to both water fowl and upland game birds (LD50 values range from 1,800 mg/kg

to >2,150 mg/kg).

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Open dumping or burning of this material or its packaging is prohibited. If spilled material cannot be disposed of by use according to label instructions, an acceptable method of disposal is to incinerate in accordance with local, state and national environmental laws, rules, standards and regulations. However, because acceptable methods of disposal may vary by location and regulatory requirements may change, the appropriate agencies should be contacted prior to disposal.

EMPTY CONTAINER: Non-returnable containers which held this material should be cleaned, prior to disposal, by triple rinsing. Containers which held this material may be cleaned by being triple-rinsed, and recycled, with the rinsate being incinerated. Do not cut or weld metal containers. Vapors that form may create an explosion hazard.

14. TRANSPORT INFORMATION

U.S. DOT (DEPARTMENT OF TRANSPORTATION)
PROPER SHIPPING NAME: Pyrethroid pesticide, solid, toxic
TECHNICAL NAME: Bifenthrin
PRIMARY HAZARD CLASS/DIVISION: 6.1
UN/NA NUMBER: UN3349
PACKING GROUP: III
REPORTABLE QUANTITY (RQ): None
U.S. SURFACE FREIGHT CLASS: Insecticides, NOI, Poison other than Class A
Poison. NMFC Item 102100.
MARINE POLLUTANT #1: bifenthrin (Severe Marine Pollutant)
NAERG: 151

15. REGULATORY INFORMATION

UNITED STATES
SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)
SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355): Not listed
SECTION 311 HAZARD CATEGORIES (40 CFR 370): Immediate, Delayed
SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370): The threshold

hold planning

quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs.

This product contains the following ingredients with a TPQ of less than

10,000 lbs.: None

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372): This product contains the

following ingredients subject to Section 313 reporting requirements:

(bifenthrin)

CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

CERCLA REGULATORY (40 CFR 302.4): Not listed

COMMENTS: Australian Hazard Code : 3XE

U.S. EPA Signal Word : WARNING

16. OTHER INFORMATION

REVISION SUMMARY This MSDS replaces the June 12, 1998 MSDS. Changes in

information are as follows:

Section 1

Date Approved

Revision Number

Section 14

U.S DOT Proper Shipping Name

U.S DOT UN/NA Number

Biflex, Bistar, Brigade, Capture, Talstar and FMC Logo - FMC Trademarks



Material Safety Data Sheet

MSDS No.: BE111
 Variant: United States
 Version No: 1.0
 Validation Date: 09/07/2001

DIPROPYLENE GLYCOL INDUSTRIAL

SECTION 1: IDENTIFICATION

Product Name: DIPROPYLENE GLYCOL INDUSTRIAL
Product Number: 000000000000499022
Chemical Name: 1,1-Oxydi-2-Propanol
CAS Number: 25265-71-8
Chemical Family: Glycols
Synonyms: Methyl-2(Methyl-2) Oxybispropanol, DPG, 2,2-Dihydroxyisopropyl Ether, 1,1-Oxydi-2-Propanol
Manufacturer: Lyondell Chemical Company
 One Houston Center, Suite 1600
 1221 McKinney St.
 P.O. Box 2583
 Houston Texas 77252-2583
Telephone Numbers:
Emergency: CHEMTREC 800 424-9300
 LYONDELL 800-245-4532
Non-Emergency CUSTOMER SERVICE
 888 777-0232
 PRODUCT SAFETY
 800 700-0946

SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component Name:	CAS #.	EU Inventory Number:	Concentration by Wt./Mol%		
			Avg.	Min.	Max.
Dipropylene Glycol	25265-71-8	EINECS 246-770-3			99.5

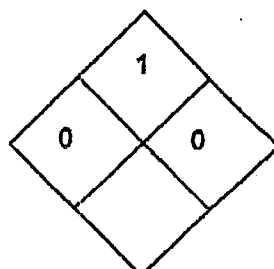
SECTION 3: HAZARD IDENTIFICATION

Emergency Overview This material is NOT HAZARDOUS by OSHA Hazard Communication definition.

Signal Word: Caution.

Hazards: Slight eye irritant. Slight skin irritant.

NFPA



HMIS®

Health	0
Flammability	1
Reactivity	0



Material Safety Data Sheet
DIPROPYLENE GLYCOL
INDUSTRIAL

MSDS No.: BE111
Variant: United States
Version No: 1.0
Validation Date: 09/07/2001

Physical State: Slightly viscous liquid.

Color: Clear, colorless.

Odor: Little or no odor.

Potential Health Effects

Routes of Exposure: Skin. Eye

Signs and Symptoms of Acute Exposure: See component summary.

- *Dipropylene Glycol* Slight eye irritant. Slight skin irritant.

Skin: May produce skin irritation. Not expected to be a skin absorption hazard.

Inhalation: Not expected to be an inhalation hazard.

Eye: May cause minor eye irritation.

Ingestion: No significant signs or symptoms indicative of any health hazard are expected to occur as a result of ingestion.

Chronic Health Effects: See component summary.

- *Dipropylene Glycol* No adverse chronic health effects are expected from anticipated conditions of normal use of this material.

Conditions Aggravated by Exposure: No additional information is available on whether overexposure to this material would aggravate other existing special medical conditions.

SECTION 4: FIRST AID MEASURES

General: After adequate first aid, no further treatment is required unless symptoms reappear.

Inhalation: Not expected to present a significant inhalation hazard under anticipated conditions of normal use.

Eye: Immediately flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower lids. If pain or irritation persists, promptly obtain medical attention.

Skin: Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first.

Ingestion: Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

Physician's Detoxification Procedures: Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.



Material Safety Data Sheet
DIPROPYLENE GLYCOL
INDUSTRIAL

MSDS No.: BE111
Variant: United States
Version No: 1.0
Validation Date: 09/07/2001

SECTION 5: FIRE FIGHTING MEASURES

Flammability Classification: OSHA/NFPA Class IIIB combustible liquid.

Flash Point / Method: ~ 138 °C(280 °F)(Open Cup)

Auto-Ignition Temperature: No Data Available.

Flammable Limits: LOWER: No Data Available.

UPPER: No Data Available.

Hazardous Combustion Products:

Thermal decomposition may produce carbon monoxide and other toxic vapors.

Special Conditions to Avoid: Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Vapors may be heavier than air. May travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point.

Extinguishing Media: Suitable: SMALL FIRE: Use dry chemicals, CO2, water spray or alcohol-resistant foam. LARGE FIRE: Use water spray, water fog or alcohol-resistant foam.

Unsuitable: Do not use solid water stream.

Fire Fighting Instructions:

Protective Equipment/Clothing: Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters protective clothing will only provide limited protection.

INSTRUCTIONS: Fight fire from a safe distance/protected location. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Use water spray/fog for cooling. Avoid frothing/steam explosion. Burning liquid may float on water. Although water soluble, may not be practical to extinguish fire by water dilution. Notify authorities immediately if liquid enters sewer/public waters.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Release Response: Vapors may ignite. Equip responders with proper protection. Evacuate/limit access. Extinguish all ignition sources. Stop release; prevent flow to sewers/public waters. Notify fire and environmental authorities. Impound/recover large land spill; soak up small spill with inert solids. Soak up small spills with inert solids. Use suitable disposal containers. On water, material is soluble and may float or sink. Contain/collect rapidly to minimize dispersion. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

SECTION 7: HANDLING AND STORAGE

Handling:

For industrial use only. When normal handling requires heating, do not heat higher than 28°C/50°F below flash point temperature unless in air-free closed system sealed off from the atmosphere. Handle empty containers with care - residue can burn if heated. Drain any necessary residue to sewer carefully to prevent upset to sewage treatment. Empty containers should be thoroughly rinsed with copious amounts of clean water. The rinse water can be used for makeup water for any necessary dilution of the concentrated product before use, or it can be properly discarded.



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Storage: Store in tightly closed/properly vented containers. Store away from heat/moisture/strong oxidizing agents. Material can attack some forms of plastics.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering Controls: No special ventilation is recommended under anticipated conditions of normal use beyond that needed for normal comfort control.

Personal Protection:

Inhalation: No special respiratory protection is recommended under anticipated conditions of normal use with adequate ventilation.

Skin: Wear chemical resistant gloves such as: Butyl rubber. or Nitrile. Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn.

Eye: Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor.

Other Hygienic Practices:

Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the hazards and/or potential hazards that may be encountered during use. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Recommended Work Practices

Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse.

Occupational Exposure Limits:

Component Name:	Source / Date	Value / Units	Type	Notation	Carcinogenic Listing*
Dipropylene Glycol	US (ACGIH) / 2001	No occupational exposure limit(s) have been established for this substance.			N/L
	US (OSHA) / 2001	No occupational exposure limit(s) have been established for this substance.			

*1 = OSHA 2 = IARC 3 = NTP 4 = Others N/L = Not Listed See Section 11 for more information

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity: ~1.03 (Water = 1.0 at 4°C (39.2°F)) **Vapor:** ~4.6, (Air = 1.0 at 15 - 20°C/59 - 68°F)
Boiling Point: ~ 228 °C/442 °F, @ 760 mm Hg **pH:** Not applicable.



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Vapor Pressure: < 0.1 mm Hg, @ (21 °C /70 °F)

Viscosity: ~ 107 mPa.s, @ (20 °C/68 °F),
(Kinematic)

Solubility: Solubility (Water):
Complete (In All Proportions).

**Melting/
Freezing
Point:** ~ -40 °C/-104 °F

Dry Point: No Data Available.

**Evaporatio
n Rate:** No Data Available.

Molecular Weight: 134.18 g/mol

**Other Physical &
Chemical Properties:** Pour point: -4.4°C (-40°F). Volatile Characteristics: Slight: 0.1 to 1.0% Additional
properties may be listed in Sections 3 and 5.

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: This material is stable when properly handled and stored.

Conditions to Avoid: High temperatures, oxidizing conditions.

Incompatibility with: Strong oxidizing agents.

Decomposition Products: Carbon Monoxide and other toxic vapors.

Hazardous Polymerization: Not expected to occur.

**Reactions with Air and
Water:** Does not react with air or water.

SECTION 11: TOXICOLOGICAL INFORMATION

Product

Summary: No known chronic or adverse effects have been associated with repeated exposure to this material.
No additional toxicology information is available for this material. (See Component Toxicity
Information).

Repeated Dose Toxicity No known chronic or adverse effects have been associated with repeated exposure to
this material.

Component Summary:

Dipropylene Glycol

LD50 (Oral)

Rat

14,800 MG/KG



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LD50 (Skin)

Rabbit

> 17,800 MG/KG

Repeated Dose Toxicity No known chronic or adverse effects have been associated with repeated exposure to this material.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity: This material is expected to be non-hazardous to aquatic species.

Toxicity to Fish:/Amphibians

Test type	Species	Value / Units
LC50 / 24 HOURS	goldfish	5,000 mg/l
LC50 / 24 HOURS	Orange-red killifish.	1,000 mg/l

Environmental Fate: Biotic Degradability: BOD 5%. Abiotic Degradability: Photolysis Half-Life 13 hrs. BOD (Modified MITI Test, II)= 3% ThOD (28 day)

Bioaccumulation: BCF < 5

Biodegradation: This material is expected to be partially or slowly biodegradable.

SECTION 13: DISPOSAL CONSIDERATIONS

Contaminated product, soil, water, container residues and spill cleanup materials may be hazardous wastes. Comply with applicable federal, state, and local regulations.

SECTION 14: TRANSPORT INFORMATION

Proper Shipping Name: Not regulated

UN/NA ID: Not regulated

NAER Guidebook: Not Applicable

Marine Pollutant: No

Labels: Not Regulated.

DOT Hazard Class: Not Regulated.

IMDG Hazard Class: Not Regulated.

ADR/MLG Hazard Class: Not Regulated.

ICAO/IATA Hazard Class: Not Regulated.

ADNR/VBG Hazard Class: Not Regulated.

RID/VSG Hazard Class: Not Regulated.

SECTION 15: REGULATORY INFORMATION

Regulatory Advisory: No chemicals in this material with known CAS numbers are subject to the reporting requirements of CERCLA.



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Regulatory Status:

All components of this product are listed or are exempt from listing on the TSCA 8(b) inventory. If identified components of this product are listed under the TSCA 12(b) Export Notification rule, they will be listed below.

**SARA - Section 313
Emissions Reporting:**

The material does not contain any chemical components with known CAS numbers that exceed the De Minimis reporting levels established by SARA Title III, Section 313 and 40 CFR 372.

Component Summary:**Reporting Threshold**

SARA - Section 311/312: Based upon available information, this material and/or components are not classified as any of the specific health and/or physical hazards defined by Section 311 & 312.

State Reporting:

- This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins under California Proposition 65 at levels which would be subject to the proposition.
- Massachusetts Substances List (MSL) - Extraordinarily hazardous substances must be identified when present in materials at levels greater than state specified criterion. The criterion is $\geq 0.0001\%$. Hazardous Substances (MSL-HS) on the MSL must be identified when present in materials at greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers present in this material, at levels specified in Section 2 - Composition do not require reporting under the statute.
- Hazardous Substances listed by the State of Pennsylvania must be identified when present in materials at levels greater than the state specified criterion. The criterion is $\geq 1\%$. Components with CAS numbers in this material at a level which could require reporting under the statute are:

Dipropylene Glycol / CAS# 25265-71-8.

SECTION 16: OTHER INFORMATION**DISCLAIMER OF
RESPONSIBILITY:**

This document is generated for the purpose of distributing health, safety, and environmental data. It is not a specification sheet nor should any displayed data be construed as a specification. The information on this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim



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liability for loss, damage, or expense arising out of or in any way connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this MSDS information may not be applicable.

Latest Revision(s):

Revised Section(s): 1 3 4 5 6 7 8 9 10 11 12 13 14 15

END OF DOCUMENT



EQUISTAR

Facsimile Transmittal Sheet

TO: Steve

COMPANY: Helena Chemicals

FAX NUMBER: 505-223-2790

FROM: Debra Curtis

FAX NUMBER: 713-309-4977

TELEPHONE NUMBER: 888-777-0232 Ext. 2260

DATE: August 8, 2003

RE: MSDS -- DPG Industrial

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Bayer CropScience

MATERIAL SAFETY DATA SHEET

BAYER CROP SCIENCE

P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013

TRANSPORTATION EMERGENCY

CALL CHEMTREC: 800-424-9300
INTERNATIONAL: 703-527-3887

NON-TRANSPORTATION

BAYER EMERGENCY PHONE...: (800) 414-0244
BAYER INFORMATION PHONE.: (800) 842-8020

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: MERIT 2 Insecticide
PRODUCT CODE.....: 21653
CHEMICAL FAMILY.....: Chloronicotinyl
CHEMICAL NAME.....: 1-((6-chloro-3-pyridinyl)methyl)-N-nitro-
2-imidazolidinimine
SYNONYMS.....: Imidacloprid; BAY NTN 33893
FORMULA.....: C9 H10 Cl N5 O2
PRODUCT USE.....: Commercial Insecticide

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
--------------------------------	-----------------	-------------------

***** HAZARDOUS INGREDIENTS *****

Imidacloprid		
138261-41-3	OSHA : Not Established	22 %
	ACGIH: Not Established	

Ingredient 1979		
Specific chemical identity is withheld as a trade secret.		
	OSHA : Not Established	1-3 %
	ACGIH: Not Established	

Ingredient 2035		
Specific chemical identity is withheld as a trade secret.		
	OSHA : Not Established	1-3 %
	ACGIH: Not Established	

3. HAZARDS IDENTIFICATION:

* EMERGENCY OVERVIEW *
* *
* Color: Off-white to tan; Form: Viscous Liquid; Suspension; *
* Odor: Mild, non-offensive. *

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Skin Absorption

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE.....: No specific symptoms of acute overexposure are known to occur in humans. Animal studies have shown that this material is mildly toxic by the oral and dermal routes. It is minimally irritating to the conjunctiva of the eye but the irritation is reversible within 72 hours. It is not a dermal irritant or a dermal sensitizer.

CHRONIC EFFECTS OF EXPOSURE....: No specific symptoms of chronic overexposure are known to occur in humans.

CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: No specific medical conditions are known which may be aggravated by exposure to this product.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation persists or develops after flushing.

FIRST AID FOR SKIN.....: Remove contaminated clothing. Wash skin with soap and water. Get medical attention if irritation persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: First, remove victim to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION.: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once.

4. FIRST AID MEASURES (Continued)

Do not induce vomiting or give anything by mouth to an unconscious person.
NOTE TO PHYSICIAN.....: Treat symptomatically. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri, be notified. Telephone: 816/242-2582
ANTIDOTES.....: None

5. FIRE FIGHTING MEASURES:

FLASH POINT.....: Greater than 200 F (93 C)

FLAMMABLE LIMITS:

UPPER EXPLOSIVE LIMIT (UEL)(%): Not Applicable

LOWER EXPLOSIVE LIMIT (LEL)(%): Not Applicable

EXTINGUISHING MEDIA.....: Water; Carbon Dioxide; Dry Chemical; Foam

SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke, cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain run-off by diking to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES.....: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition if combustible or flammable vapors may be present and ventilate area. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Use dry absorbent material such as clay granules to absorb and collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE (MIN/MAX): None/30 day average not to exceed 100 F.

SHELF LIFE.....: Not Noted

SPECIAL SENSITIVITY.....: Not Noted

7. HANDLING AND STORAGE (Continued)

HANDLING/STORAGE PRECAUTIONS: Store in a cool dry area designated specifically for pesticides. Do not store near any material intended for use or consumption by humans or animals.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Splash-proof goggles should be used to prevent liquid splashes from getting into the eyes.

SKIN PROTECTION REQUIREMENTS.....: Wear long sleeves and trousers to prevent skin contact.

HAND PROTECTION REQUIREMENTS.....: The use of chemical-resistant gloves to prevent skin contact is recommended as good practice.

VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation where needed.

RESPIRATOR REQUIREMENTS.....: Under normal handling conditions, no respiratory protection is needed; however, when potential exposure to this product is excessive, wear a NIOSH-approved respirator for dusts and mists or for pesticides.

ADDITIONAL PROTECTIVE MEASURES.....: Clean water should be available for washing in case of eye or skin contamination. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing after use. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Viscous Liquid; Suspension

COLOR.....: Off-white to tan

ODOR.....: Mild, non-offensive

ODOR THRESHOLD.....: Not established

MOLECULAR WEIGHT.....: 255.7 (for imidacloprid)

pH: 7.5

BOILING POINT.....: Not established

MELTING/FREEZING POINT.....: Freezing: 20 F

VISCOSITY.....: 350-500 cps @ 25 C

SOLUBILITY IN WATER: 75% of mixture

SPECIFIC GRAVITY: 1.12

BULK DENSITY.....: Not applicable

% VOLATILE BY VOLUME.....: Not established

VAPOR PRESSURE: 1.5×10^{-9} mm @ 20 C (for imidacloprid)

VAPOR DENSITY: Not established (Air = 1)

10. STABILITY AND REACTIVITY:

STABILITY.....: This is a stable material.
HAZARDOUS POLYMERIZATION...: Will not occur.
INCOMPATIBILITIES.....: None known
INSTABILITY CONDITIONS.....: Strong exothermal reaction above 200 C
(imidacloprid)
DECOMPOSITION PRODUCTS.....: Proposed: HCl, HCN, CO, NOx (for imidacloprid)

11. TOXICOLOGICAL INFORMATION:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the technical-grade active ingredient, Imidacloprid.

ACUTE TOXICITY

ORAL LD50.....: Male Rat: >4870 mg/kg; Female Rat: 4143 mg/kg
DERMAL LD50.....: Male & Female Rabbit: >2000 mg/kg
INHALATION LC50.....: 4 Hr. Exposure to Liquid Aerosol: Male and Female Rat: >5.33 mg/l (analytical) -- 1Hr. Exposure to Liquid Aerosol (extrapolated from 4 Hr. LC50): Male and Female Rat: >20 mg/l (analytical)
EYE EFFECTS.....: Rabbit: Only minimal irritation to the conjunctiva was observed with all irritation resolving within 72 hours.
SKIN EFFECTS.....: Rabbit: Not a dermal irritant.
SENSITIZATION.....: Guinea Pig: Not a dermal sensitizer.

SUBCHRONIC TOXICITY...: In a 3 week dermal toxicity study, rabbits were treated with the active ingredient, imidacloprid, at the limit dose level of 1000 mg/kg for 6 hours/day, 5 days/week. There were no local or systemic effects observed at any of the levels tested. The no-observed-effect-level (NOEL) was 1000 mg/kg. In a 4 week inhalation study, rats were exposed to dust concentrations of imidacloprid at 5.5, 30.5 and 191.2 mg/cubic meter for 6 hours/day, 5 days/week. Effects observed at the high concentration included decreased body weight gains, decreased heart and thymus weights, increased liver weights, and induction of the hepatic mixed-function oxidases. Histopathological examinations did not reveal any organ damage or local injury to the respiratory tract. The NOEL was 5.5 mg/cubic meter based on induction of the hepatic mixed-function oxidases.

CHRONIC TOXICITY.....: Dogs were administered imidacloprid for 1 year at dietary concentrations of 200, 500 or 1250 ppm. Due to the lack of significant effects, the high dose was increased to 2500 ppm at 17 weeks for the remainder of the study. Effects at the high dose included decreased food consumption, increased liver weights and elevated serum chemistries. The NOEL was 500 ppm. In chronic studies using rats, imidacloprid was administered for 2 years to rats at dietary concentrations of 100, 300, 900 or 1800 ppm. Histopathology examinations revealed an increased incidence of mineralization in the colloid of the thyroid follicles at concentrations of 300 ppm and

11. TOXICOLOGICAL INFORMATION (Continued)

greater. At 1800 ppm, there were changes in the serum chemistries and a slight increase in the incidence of parafollicular hyperplasia seen in the thyroids. Body weight gains were reduced at 900 and 1800 ppm. The overall NOEL was 100 ppm.

CARCINOGENICITY.....: Imidacloprid was investigated for carcinogenicity in chronic feeding studies using mice and rats at maximum levels of 2000 and 1800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY.....: The imidacloprid mutagenicity studies, taken collectively, demonstrate that the active ingredient is not genotoxic or mutagenic.

DEVELOPMENTAL TOXICITY: In a teratology study using rats, imidacloprid was administered by oral gavage during gestation at doses of 10, 30 or 100 mg/kg. At the maternally toxic dose of 100 mg/kg, skeletal examinations of the fetuses revealed a slight increase in the incidence of wavy ribs. The NOELs for maternal and developmental toxicity were 10 and 30 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested. Rabbits were administered imidacloprid during gestation at oral doses of 8, 24 or 72 mg/kg. At the maternally toxic dose of 72 mg/kg, reduced body weights and delayed skeletal ossification were observed in the fetuses. The NOELs for maternal and developmental toxicity were 8 and 24 mg/kg, respectively. Teratogenic effects were not observed at any of the doses tested.

REPRODUCTION.....: In a reproduction study, imidacloprid was administered to rats for 2 generations at dietary concentrations of 100, 250 or 700 ppm. Offspring at 700 ppm, exhibited reduced mean body weights and body weight gains. No other reproductive effects were observed. The maternal and reproductive NOELs were 100 and 250 ppm, respectively.

NEUROTOXICITY: In an acute oral neurotoxicity study using rats, imidacloprid was administered as a single dose at concentrations of 42, 151 or 307 mg/kg. Clinical observations and neurotoxicity evaluations were performed over a period of 15 days followed by a neurohistopathological examination. Deaths attributed to imidacloprid were observed at the high dose within a day of treatment. The NOEL for motor and locomotor activity was 42 mg/kg for males. Females at the low dose exhibited minimal decrease in activity in the figure-eight maze. In a subsequent study, the NOEL for motor and locomotor activity in females was 20 mg/kg. The NOEL for neurotoxicity was 307 mg/kg based on the absence of treatment-related microscopic lesions in skeletal muscle or neural tissue. In a 13 week neurotoxicity study, imidacloprid was administered to rats at dietary concentrations of 140, 963 or 3027 ppm. At the mid-and high dose, effects observed included reductions in body weight and feed consumption, and clinical chemistry findings. Neurobehavioral changes were observed only in males at the high dose. There were no correlative micropathologic findings in muscle or neural tissues in any animals at any treatment level. The NOEL for neurotoxicity was 3027 ppm. The overall NOEL was 140 ppm.

12. ECOLOGICAL INFORMATION:

NO ECOLOGICAL INFORMATION AVAILABLE

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Follow container label instructions for disposal of wastes generated during use in compliance with the product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction. Do not reuse container.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: Imidacloprid
FREIGHT CLASS BULK.....: Insecticides, NOI-NMFC 102120
FREIGHT CLASS PACKAGE.....: Insecticides, NOI-NMFC 102120
PRODUCT LABEL.....: Not Noted

DOT (DOMESTIC SURFACE)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS OR DIVISION: Non-Regulated

IMO / IMDG CODE (OCEAN)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER....: Non-Regulated

ICAO / IATA (AIR)

PROPER SHIPPING NAME.....: Not hazardous or regulated
HAZARD CLASS DIVISION NUMBER....: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS.....: This product is exempt from TSCA Regulation under FIFRA Section 3 (2) (B) (ii) when used as a

15. REGULATORY INFORMATION (Continued)

pesticide.

CERCLA REPORTABLE QUANTITY...: No components listed

SARA TITLE III:

SECTION 302 EXTREMELY

HAZARDOUS SUBSTANCES...: None

SECTION 311/312

HAZARD CATEGORIES.....: Immediate Health Hazard

SECTION 313

TOXIC CHEMICALS.....: None

RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

16. OTHER INFORMATION:

NFPA 704M RATINGS:	Health	Flammability	Reactivity	Other
	1	1	1	0
	0=Insignificant	1=Slight	2=Moderate	3=High 4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Remove EPA Registration Number

PREPARED BY.....: V. C. Standart

APPROVED BY.....: D. C. Eberhart

TITLE.....: Director Product Safety & Stewardship

APPROVAL DATE.....: 09/19/2002

SUPERSEDES DATE.....: 09/23/1994

MSDS NUMBER.....: 15960

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Product Code: 21653
Approval date: 09/19/2002

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Last page